

Risky Driving Behaviors among Medical Students in the Middle East: Identifying Areas for Intervention

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Abstract

A cross sectional study was conducted on medical students enrolled in the Arabian Gulf University in the Kingdom of Bahrain. The objective was to describe medical students' risk-taking behaviors while driving and to provide recommendations for promoting safe driving behaviors among them. A self administered anonymous questionnaire was used, which included questions on demography and driving behaviors. Medical students demonstrated risk taking behaviors while driving, as 40.1% of them did not use their seatbelts, 49.6% speeded (>100km/hr), 54.7% talked on their mobile phones and 45.9% wrote/read text messages while driving. Female students had lower driving risk taking behaviors compared to males. Driving risk taking behaviors declined as students progressed in their medical years. Saudi and Kuwaiti students had more risk taking behaviors than other nationalities. Driving risk taking behaviors cluster among students according to gender, medical year and nationality. Urgent interventions are needed to promote safe driving behaviors among students.

1. Introduction

Adolescents engage in a wide range of risky behaviors facing twice the risk of mortality and morbidity faced by their younger peers. (Tymula et al., 2012). The population of drivers who are 18-25 years old represents a significant proportion of the people who are killed on the road. This category of drivers tends to take more risks while driving than do older drivers (Cestac, Paran, and Delhomme, 2011). Distracted driving is a highly prevalent behavior among university students who have higher confidence in their own driving skills and ability to multitask (Hill et al., 2014). Talking and texting while driving poses extreme safety risks especially among younger drivers. These attitudes were related to increased recklessness exhibited while engaging in this behavior (Harrison, 2011). Studies in the Arabian Gulf region have addressed specific lifestyle behaviors of health professionals such as health-promoting lifestyle (Hamadeh, 1994, Al-Shahri and Mian, 1997, Behbehani et al., 2004 and Al-Kandari and Vidal, 2007). Arabian Gulf University (AGU) students are valuable advocates for families as they were able also to offer practical help in lifestyle behavior changes, communication, and community-resource use (Grant, Naseeb and Al-Garf, 2007).

Arabian Gulf University (AGU) is a regional university established in 1983 and based in the Kingdom of Bahrain. It has two colleges, the College of Medicine and Medical Sciences (CMMS) and the College of Graduate Studies. AGU hosts students of both genders from Gulf Cooperation Council (GCC) countries (Bahrain, Saudi Arabia, Kuwait, Oman, UAE and Qatar), where students are admitted based on their country's quota. Thus, AGU provides a unique opportunity to suggest guidelines to medical schools in the

GCC countries. The CMMS follows a problem-based, student-centered and community-oriented curriculum. The problem-based learning (PBL) curriculum integrates basic medical sciences with related professional skills training, and community health activities. The program is of six years duration divided into three phases: the basic Sciences Phase (Phase I: Year 1), Pre-clerkship Phase (Phase II: Years 2-4), Clinical Clerkships Phase (Phase III: Years 5 and 6). The students learn about the hazards of tobacco smoking throughout phase II and III due to the spiral nature of the medical curriculum. At CMMS, English is the language of instruction (Hamdy & Anderson, 2006). The objective of the study was to describe the Arabian Gulf University medical student's risk-taking behavior while driving and to provide recommendations for promoting safe driving behavior among them.

2. Methods

A cross sectional study was conducted among AGU Years 1 to 4 medical students, during May 2009. A census of all AGU Years 1 to 4 medical students (535) who were enrolled during the Academic Year 2008-2009, was obtained from the Admission and Registration Unit. A self administered anonymous questionnaire in the English language was used. The questionnaire has been abridged from the adult questionnaire of the United Arab Emirates Health and Lifestyle Survey 2000 (Badrinath et al., 2002), which was validated and field tested. It was distributed to the students during May 2009 in the following manner: For Year 1 students, the questionnaire was distributed at the beginning of the Biostatistics class. As Years 2 to 4 students are divided into groups of 8-10 students in the tutorial sessions which are held twice per week, hence those students were given the questionnaires by their respective tutors during their first session. The respective tutors were briefed about this process by a covering letter which was kept along with the questionnaires in the tutorial boxes that contain the teaching materials. These boxes were collected from the medical education office by tutors before the tutorial sessions and returned back after the tutorial sessions. The completed questionnaires were put in sealed envelopes by the students and returned to the tutor who placed them in the tutorial boxes. The questionnaires were resent in the following week to the tutors for the students who were absent the day of data collection during the tutorial session. A covering letter was enclosed in the tutorial box to the respective tutors instructing them to distribute the questionnaires only to the students who were absent in the previous tutorial session. Data entry and analysis were done using the Statistical Product and Service Solutions (SPSS), Version 17.0. Descriptive statistics and the chi-square test was applied when appropriate.

3. Results

Of the 535 medical students who were enrolled in years 1-4, 443 responded to the questionnaire thus resulting in a 82.8% response rate. Only sixty two percent of all medical students reported that they drove cars (Figures 1 and 2). Medical students practiced risky behaviors while driving, as half of them did not fasten their seatbelts, usually exceeded 100km/hr, talked on mobile phones, wrote and read text messages while driving (Figure 3). The study showed that there were statistically significant differences between use of seatbelts while driving, by gender ($p<0.001$), nationality ($p<0.001$) and medical year ($p<0.001$). Forty nine percent of the male students did not use seatbelts compared to 34% of the female students.

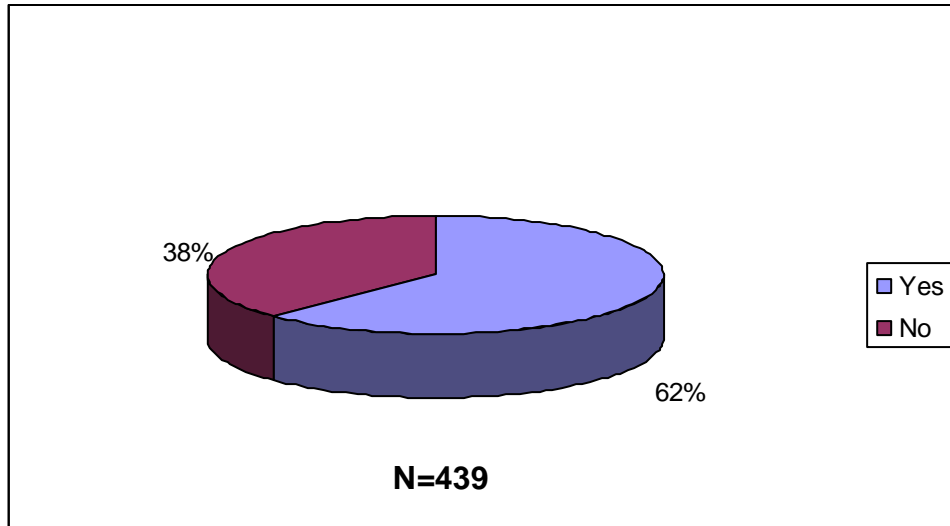


Figure 1. Driving among Medical Students

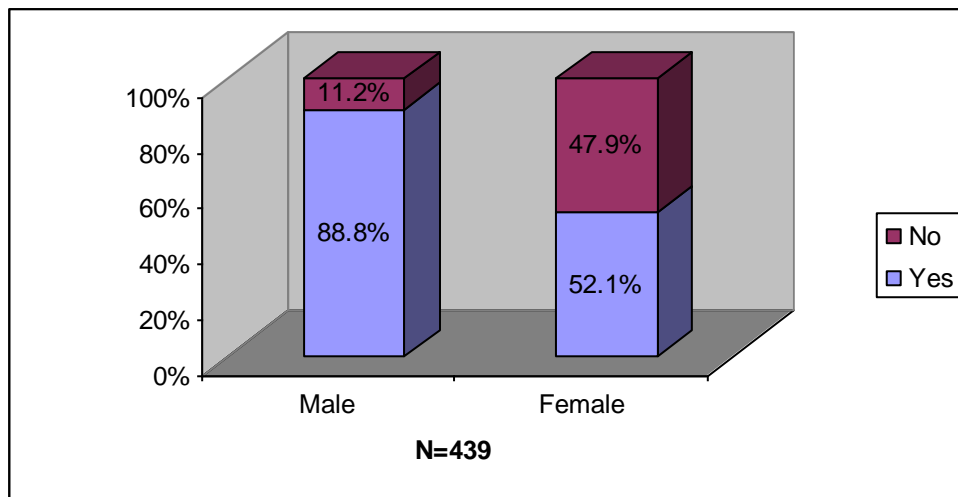


Figure 2. Driving among Medical Students by Gender

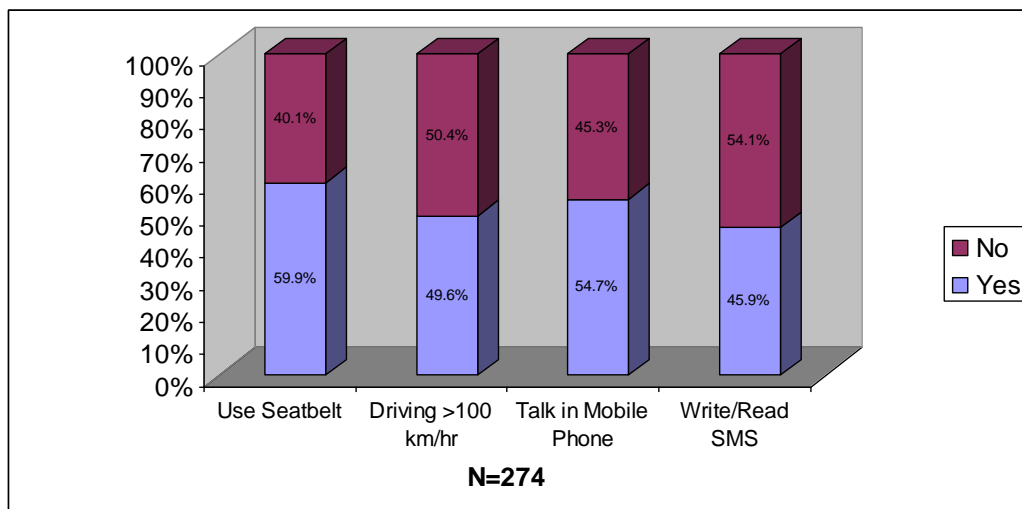


Figure 3. Risk Taking Behaviors during Driving among Medical Students

A higher percentage of Kuwaiti (56.6%) and Saudi students (39.3%) did not use seatbelts during driving compared to 31.5% of the Bahraini and 9.1% of the Omani students. All the Omani male students and 55.9% of the Bahraini used seatbelts while driving compared to 43.6% of the Kuwaiti and 52.9% of the Saudi. As for the female students, 75.3% of the Bahraini, 70.4% of the Saudi and 90% of the Omani used seatbelts while driving compared to only 43.2% of the Kuwaiti female students. As students progressed in medical years, more of them used seatbelts while driving than those in the earlier medical years. There was a positive association between use of seatbelt and medical year. The percent increased from 43.5% in Year 1 to 68.2% in Year 4 ($p < 0.001$) (Table 1 and 2).

Table 1. Seatbelt Use While Driving among Medical Students by Gender and Medical Year

	Yes	No
Gender N=273		
Male	51.4%	48.6%
Female	66.0%	34.0%
Total	60.1%	39.9%
p value	< 0.001	
Medical Year N=274		
Year 1	43.5%	56.5%
Year 2	58.2%	41.8%
Year 3	66.7%	33.3%
Year 4	68.2%	31.8%
Total	59.9%	40.1%
p value	< 0.001	

Table 2. Seatbelt Use While Driving among Medical Students by Nationality

Nationality	Male N= 111		Female N= 161		Total	
	Yes	No	Yes	No	Yes	No
Bahraini	55.9%	44.1%	75.3%	24.7%	68.5%	31.5%
Kuwaiti	43.6%	56.4%	43.2%	56.8%	43.4%	56.6%
Saudi	52.9%	47.1%	70.4%	29.6%	60.7%	39.3%
Omani	100.0%	0.0%	90.0%	10.0%	90.9%	9.1%
Other	66.7%	33.3%	57.1%	42.9%	60.0%	40.0%
Total	51.4%	48.6%	65.8%	34.2%	59.7%	40.3%
p value	0.219		< 0.001		< 0.001	

The study showed that there were statistically significant differences between students speeding (>100 km/hr) while driving by gender, nationality and medical year. Sixty nine percent of the male students speeded while driving compared to 36.9% of the female students. Higher percentages of Kuwaiti (58.3%) and Saudi (28.3%) students speeded (>100 km/hr) while driving compared to 32.7% of the Bahraini and 30% of the Omani students. Further analysis by gender, showed that Bahraini students ranked lowest for speeding in both sexes. 71.8% of the Kuwaiti male students and 91.2% of the Saudi speeded while driving compared to 41.2% of the Bahraini male students. More Kuwaiti (46.7%) and Saudi (46.2%) female students speeded while driving

compared to the Bahraini (29.2%), Omani (22.2%) and one of the four Emirati female students. As students progressed in their medical years, they tended to be less likely to speed while driving (Table 3 and 4). This may be due to the knowledge of the risks of reckless driving that students acquire from their medical curriculum.

Table 3. Speeding (>100 km/hr) While Driving among Medical Students by Gender and Medical Year

	Yes	No
Gender N=271		
Male	68.5%	31.5%
Female	36.9%	63.1%
Total	49.8%	50.2%
p value	< 0.001	
Medical Year N=272		
Year 1	54.8%	45.2%
Year 2	52.2%	47.8%
Year 3	45.8%	54.2%
Year 4	46.4%	53.6%
Total	49.6%	50.4%
p value	0.670	

Table 4. Speeding (>100 km/hr) While Driving among Medical Students by Nationality

Nationality	Male N= 111		Female N= 159		Total	
	Yes	No	Yes	No	Yes	No
Bahraini	41.2%	58.8%	29.2%	70.8%	32.7%	67.3%
Kuwaiti	71.8%	28.2%	46.7%	53.3%	58.3%	41.7%
Saudi	91.2%	8.8%	46.2%	53.8%	71.7%	28.3%
Omani	100.0%	0%	22.2%	77.8%	30.0%	70.0%
Other	66.7%	33.3%	42.9%	57.1%	50.0%	50.0%
Total	68.5%	31.5%	37.1%	62.9%	49.8%	50.2%
p value	< 0.001		0.233		0.001	

There were statistically significant differences between students for talking on mobile phones while driving by gender and nationality. Sixty three percent of the male students talked on mobile phones while driving compared to 48.8% of their female counterparts. A higher proportion of Kuwaiti (67.9%), Saudi (56.7%) and Emirati (50%) students talked on mobile phones during driving than the Bahraini (44.4%) and Omani students (36.4%). A similar percentage of Kuwaiti (74.4%) and of Saudi (73.5%) male students talked on mobile phones while driving compared to 44.1% Bahraini and none of the Omani male students. Sixty two percent of the Kuwaiti and 43.8% of the Bahraini female students talked on mobile phones while driving compared to 34.6% of the Saudi and 40% of the Omani. However, there were no statistically significant differences between talking on mobile phone while driving and medical years (Table 5 and 6).

Table 5. Talking on Mobile Phones While Driving among Medical Students by Gender and Medical Year

	Yes	No
Gender N=273		
Male	63.1%	36.9%
Female	48.8%	51.2%
Total	54.6%	45.4%
p value	0.020	
Medical Year N=274		
Year 1	50.0%	50.0%
Year 2	58.2%	41.8%
Year 3	54.2%	45.8%
Year 4	55.8%	44.2%
Total	54.7%	45.3%
p value	0.817	

Table 6. Talking on Mobile Phones While Driving among Medical Students by Nationality

Nationality	Male N= 111		Female N= 161		Total	
	Yes	No	Yes	No	Yes	No
Bahraini	44.1%	55.9%	43.8%	56.2%	44.4%	55.6%
Kuwaiti	74.4%	25.6%	62.2%	37.8%	67.9%	32.1%
Saudi	73.5%	26.5%	34.6%	65.4%	56.7%	43.3%
Omani	0%	100.0%	40.0%	60.0%	36.4%	63.6%
Other	33.3%	66.7%	71.4%	28.6%	60.0%	40.0%
Total	63.1%	36.9%	48.4%	51.6%	54.6%	45.4%
p value	0.019		0.099		0.016	

The study showed that there were no statistically significant differences between students who wrote/read text messages while driving, by gender, nationality, and medical year. However, 50% of the male students wrote/read text messages while driving compared to 42.8% of the females. More Kuwaiti (57.1%) and Saudi students (45.6%) wrote/read text messages than other nationalities except the Emirati where 3 out of the 4 students wrote/read text messages while driving. A higher percentage of Saudi (56.3%) males wrote/read text messages while driving than the Bahraini (48.5%), Kuwaiti (48.7%) and Omani male students. However, the percentage of female students who wrote/read text messages was highest among Kuwaiti (64.4%) students followed by Omani (44.4%), Bahraini (31.9%) and Saudi (32%). Lower percentages of students in Year 1 (41%) and Year 2 (40.9%) wrote/read text messages than those in Year 3 (53.4%) and 4 (48.2%) (Table 7 and 8).

Table 7. Writing/Reading Text Messages While Driving among Medical Students by Gender and Medical Year

	Yes	No
Gender N=267		
Male	50.0%	50.0%
Female	42.8%	57.2%
Total	45.7%	54.3%
p value	0.244	
Medical Year N=268		
Year 1	41.0%	59.0%
Year 2	40.9%	59.1%
Year 3	53.4%	46.6%
Year 4	48.2%	51.8%
Total	45.9%	54.1%
p value	0.430	

Table 8. Writing/Reading Text Messages While Driving among Medical Students by Nationality

Nationality	Male N= 108		Female N= 158		Total	
	Yes	No	Yes	No	Yes	No
Bahraini	48.5%	51.5%	31.9%	68.1%	37.7%	62.3%
Kuwaiti	48.7%	51.3%	64.4%	35.6%	57.1%	42.9%
Saudi	56.3%	43.8%	32.0%	68.0%	45.6%	54.4%
Omani	0%	100.0%	44.4%	55.6%	40.0%	60.0%
Other	33.3%	66.7%	57.1%	42.9%	50.0%	50.0%
Total	50.0%	50.0%	43.0%	57.0%	46.1%	53.9%
p value	0.756		0.008		0.120	

4. Discussion and conclusion

Driving risk taking behaviors cluster among students according to gender, nationality and medical year. AGU Years 1 to 4 medical students demonstrated risk taking behaviors while driving, as 40.1% of them did not use their seatbelts, 49.6% speeded (>100km/hr), 54.7% talked on their mobile phones and 45.9% wrote/read text messages while driving. In general, female students had lower driving risk taking behaviors compared to males, while all the risk driving behaviors declined as students progressed in their medical years as observed in using seatbelts and writing/reading text messages. However, Saudi and Kuwaiti students had more risk taking behaviors than other nationalities. These findings were elaborated by Patil et al. (2006) as they reported that personality characteristics predicted driving behaviors such as high-risk driving and different risk-taking driving. These behavioral variables are known to contribute to crashes, and provide an intermediate target for interventions to reduce motor vehicle crashes. Moreover, a study in Kuwait concluded that the rapidly growing use of mobile phones by drivers has added a new dimension to the complexity of the driving task and further contributes to the deterioration of road safety (Koushki, Ali and Al-Saleh, 1999). Urgent interventions

are needed at AGU on promoting safe driving behaviors as part of a healthy lifestyle among medical students. We recommend that the admission policy to the Medical School should include information about students' driving behaviors in order to facilitate early intervention. The universities in GCC countries should consider having policies on the promotion of the students' wellbeing and healthy behavioral patterns and to reinforce knowledge regarding safe driving behaviors throughout the medical curriculum.

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